



Spectral Gamma-Ray Borehole
Log Data Report

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Borehole

40-12-09

Log Event A

Borehole Information

Farm : <u>S</u>	Tank : <u>S-112</u>	Site Number : <u>299-W23-176</u>
N-Coord : <u>35,924</u>	W-Coord : <u>75,915</u>	TOC Elevation : <u>663.21</u>
Water Level, ft :	Date Drilled : <u>11/30/1971</u>	

Casing Record

Type : <u>Steel-welded</u>	Thickness : <u>0.280</u>	ID, in. : <u>6</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>100</u>	

Cement Bottom, ft. : 127 Cement Top, ft. : 125

Borehole Notes:

This borehole was drilled in November 1971 and completed to a depth of 100 ft with 6 in. diameter casing. The driller's log contains no mention of perforations or grouting; therefore it is assumed that the casing is not perforated or grouted. The casing thickness is assumed to be 0.280 in., on the basis of the published thickness for schedule 40-6 in. casing.

The top of the casing is the zero reference for the log. The casing lip is approximately even with the ground surface.

Equipment Information

Logging System : <u>2</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>05/1996</u>	Calibration Reference : <u>GJPO-HAN-5</u>	Logging Procedure : <u>P-GJPO-1783</u>

Log Run Information

Log Run Number : <u>1</u>	Log Run Date : <u>08/05/1996</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>99.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>44.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>
Log Run Number : <u>2</u>	Log Run Date : <u>08/06/1996</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>45.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>0.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>



Borehole

40-12-09

Log Event A

Analysis Information

Analyst : H.D. Mac Lean

Data Processing Reference : P-GJPO-1787

Analysis Date : 05/21/1997

Analysis Notes :

The SGLS log of this borehole was completed in two logging runs. A centralizer was used during both runs. The pre- and post-survey field verification spectra for both logging runs met the acceptance criteria established for peak shape and system efficiency. The energy and peak-shape calibration that best matched the logging run data were used to establish the channel-to-energy parameters used in processing the spectra acquired during the logging runs. There was negligible gain drift during the logging runs and it was not necessary to adjust the established channel to energy parameters to maintain proper peak identification.

Casing correction factors for a 0.280-in.-thick casing were applied during the analysis.

Cs-137 was the only man-made radionuclide detected in this borehole log. Cs-137 contamination was detected at the ground surface, at 9 ft, 15.5 ft, continuously from 16.5 to 25.5 ft, and at 29 ft. The maximum subsurface Cs-137 concentration was just over 1 pCi/g at 22.5 ft. All other measured Cs-137 concentrations were 0.3 pCi/g or less, except at the ground surface. The measured apparent Cs-137 concentration at the surface was approximately 3 pCi/g.

The log of the naturally occurring radionuclides shows an increased K-40 concentration from 55 to 58 ft and 64 to 66 ft. The K-40 concentration increases from a background value of about 9 to 12 pCi/g at a depth of 69 ft. The background KUT concentrations increase perceptibly below the 69-ft depth.

Details concerning the interpretation of data for this borehole are presented in the Tank Summary Data Report for tank S-112.

Log Plot Notes:

Separate log plots show the man-made and the naturally occurring radionuclides. The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.

A combination plot includes the man-made and natural radionuclides, the total gamma derived from the spectral data, and the Tank Farms gross gamma log. The uncertainty bars and the MDL values have been deleted from this plot. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.